

GUJARAT TECHNOLOGICAL UNIVERSITY**M. E. IST Semester–Remedial Examination – July- 2011****Subject code: 711303****Subject Name: Highway Materials & Construction****Date: 11/07/2011****Time: 10:30 am – 01:00 pm****Total Marks: 60****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Write desired properties of aggregates. Discuss aggregate blending methods. **06**
(b) What are the types of bituminous materials? Enlist various tests to check quality and properties of bituminous materials. **06**

- Q.2** (a) Write principles of stabilization. Explain soil-cement stabilization with clearly stating the factors affecting strength of soil-cement mixes. **06**
(b) What are the requirements of bituminous mixes? Write steps for design of bituminous mixes. **06**

OR

- (b) Explain bituminous mix design by Marshall test with its typical graph plots. **06**

- Q.3** (a) Discuss use of geotextile materials in highway construction. **06**
(b) Explain roll of compaction and consolidation in highway construction. **06**

OR

- Q.3** (a) Explain bituminous penetration macadam construction method with material requirement. **06**
(b) What are quality control criteria for highway construction? Write permissible limits for highway construction for impact, abrasion and shape test value of stone aggregates. **06**

- Q.4** (a) Write construction steps of cement concrete pavements. Also draw the sketch showing joints and write the material use as filler in joints. **06**
(b) What are the problems in desert and swampy area for highway construction? Also discuss about their solution. **06**

OR

- Q.4** (a) What are the factors affecting subgrade soil strength? Write the steps for preparation of subgrade. **06**
(b) Explain subsurface drainage with sketch. **06**

- Q.5** (a) What are the problems in highway construction in hilly area? Explain drainage in hilly area with sketch. **06**
(b) Discuss about sub-base, base and surface courses of pavement. **06**

OR

- Q.5** (a) What is surfacing and surface treatment? **06**
(b) Write aim of following tests on materials of highway construction: **06**
1) Penetration test
2) Softening point test
3) Stripping value test
4) Proctor test
5) CBR
6) Specific gravity
7) ductility
